Specification Amendments:

Please replace paragraphs [006] with the following amended paragraph:

[006] With ATM, connections can be established with varying network guarantees concerning cell loss, cell delay, cell delay variance and throughput by choosing an "ATM Transfer Capability" (ATC) and Quality of Service class (QoS class). The amount charged for an ATM connection should preferably also reflect this additional flexibility, which is the subject of the present invention. An important aspect in determining the manner of charging for ATM connections is the direction (incentive) that the charging gives to the manner of network usage. In a traditional telephone network, the time-related charge usually assures that the customer does not unnecessarily occupy the connection. In a traditional data network, usually a volume rate is used, so that there is an incentive not to burden the network with unnecessary traffic. Another example is the application of an off-peak rate with a plan to shift a portion of the network traffic to periods outside the peak hours so that the network can have a smaller configuration and is thereby less expensive.

Please replace paragraphs [007] with the following amended paragraph:

[007] The present state of the art usually envisages basing the charge of an ATM connection on two variables, i.e. a

time component, the duration of time of the connection (session), and a volume component, the total number of ATM cells transmitted and/or received during the connection. Both variables can easily be measured, registered and processed into a charge during the connection. On processing ~~of~~ the values of the time component, the price per unit can depend on various quantities. Examples of such quantities are the distance covered and time of the day or of the week, comparable with the usual charging for telephone. Examples of other quantities are the ATM parameters such as the Peak Cell Rate of the connection etc.

Please replace paragraph [009] with the following amended paragraph:

[009] A charge which is exclusively based on the time and volume component as set out in the above, has as a consequence that only the total connection duration and only the total number of cells during the duration of the connection play a role in the charge. For these quantities (and thereby for the charge), it does not matter whether all cells are offered evenly over the connection duration ("Constant Bit Rate") or are concentrated in one or more bursts of cells ("Variable Bit Rate"). For the network, it is advantageous if the cells offered are spread out in time as much as possible. ATM connections that use SBR (Statistical Bit Rate) are characterized by two additional parameters, the Sustainable Cell Rate (SCR) and the Maximum Burst Size (MBS). The essence of the situation set out

above does not change; however, the user experiences no incentive to spread the cells as evenly as possible. While this is beneficial for the total network capacity and consequentially is pursued by the network operator. The question is, in which way can the user can be urged to offer the traffic as evenly as possible. In other words, a method is needed to urge the network user via the charging mechanism to offer the traffic in a less bursty way. If in an ATM network use is made of an ABR (Available Bit Rate) control mechanism, the network dynamically assigns capacity to each connection. However, it can occur that the network assigns capacity to a connection but that the user does not use or completely use that capacity, e.g., if the user sends less cells than the assigned capacity allows. With the present charging mechanisms (based on a total time and a total volume component in the charge), leaving capacity assigned by the network unused leads to a lower charge. There is no incentive to use the assigned capacity indeed and there is no incentive to gear the capacity to the actual current need.

Please replace paragraph [011] with the following amended paragraph:

[011] The IP (Internet Protocol) is a connectionless packet switched technique that is used for the Internet. Current IP networks exclusively supply a so-called best-effort service. The network commits itself to make an effort to deliver ~~the~~ a packet (datagram) at ~~the~~ its destination but no guarantee is given; the packet can be lost in case of ~~a~~

congestion. It is customary to charge access to the Internet only, e.g., by a fixed amount per month (flat rate) or by a fixed rate per unit of time (hour) that the user is logged onto an Internet Service Provider. In this type of charging, there is no relationship with the amount of data that a user asks or offers.

Please replace paragraph [016] with the following amended paragraph:

[016] One of the proposed possibilities is to use reservations, e.g., with the protocol RSVP. In that case, it is desirable that the extent of the reservation requested or made and the duration of the reservation is expressed in the charge.

Please replace paragraph [017] with the following amended paragraph:

[017] In another proposed approach, some bits in the IP header are used to indicate to which service class the IP packet belongs, e.g., "best-effort" or "guaranteed with short delay". In that case, it is desirable that the indication of the service class also is expressed in the charge.

Please replace paragraph [021] with the following amended paragraph:

[021] To this end, the invention proposes not to measure and charge the total number of data units (cells, IP datagrams, bytes in IP datagrams) during the whole connection (session), but to subdivide a connection in shorter or longer measuring periods, to measure the number of data units during such measurement periods and base the charging on that. The invention comprises hereunto a measurement device for measuring the number of data units received and/or transmitted during a set period of time, shorter than the time during which said telecommunication connection is open or active. Instead of measuring the number of data units over a fixed period, it is conversely also possible to measure the duration of time between the reception or transmission of a specific number of data units. Furthermore, the invention comprises a calculation device for calculating, for each set or measured period of time, the number of data units per unit of time and offering that calculation result to a billing system. The calculation device calculates thus per —a shorter or longer —period the real data units / time ratio, whereby the billing follows the actual network load more accurately. Thus, for the user an incentive can be created not to offer the data in bursts but more evenly and thereby contributing to a more efficient network use.

Please replace paragraph [022] with the following amended paragraph:

[022] The measuring period can be equal to the interarrival time of two consecutive cells of a same connection. The rate over the period from ti ~~until~~ to and including ti+1 is then equal to 1/(ti+1 - ti), in other words, the inverse of the difference of the arrival and send times of two consecutive cells. The measuring period can also be longer, e.g., the time between cell number i and cell number i+n, where n>1. The measuring period can also be a set period, e.g., 100 ms. It will be appreciated that the shorter the measuring period is, the more accurate the measurements are, but also the larger the calculation capacity of the charging computer has to be. Also, it requires transmission traffic between the charging measurement points and the charging computer.

Please replace paragraph [029] with the following amended paragraph:

[029] A physical communication line 1 transports ATM cells. The cells can belong to different virtual connections (channels, paths). A measuring device 2 detects from the header of an arriving cell the virtual connection to which the cell belongs. In the measuring device 2, for each (virtual) connection, a counter reading is kept up to date with the number of arriving cells. A clock generator 3 generates ~~periodical~~ periodic clock pulses. A calculation device 4 calculates per connection ~~the~~ a ratio between ~~the~~

a number of arrived cells and ~~the~~ a number of clock pulses and passes this ratio on to a billing system 5. According to the invention, ~~said~~ the ratio is not calculated over the entire time that a connection is active but over smaller periods. There are therein two possibilities, viz. (per connection) starting from a fixed measuring period T and counting the number n of cells arriving in that period, wherein the ratio $r = n/T$, or starting from a fixed number of cells N and measuring the time t which is needed for the arriving of those cells, wherein $r = N/t$.

Please replace paragraph [032] with the following amended paragraph:

[032] For use in an IP network (where the packet size may vary) the measuring device (2) is moreover able to measure and register the size of the packet (datagram). The registration includes then the number of IP datagrams and the cumulative number of bytes in those datagrams. A calculation device 4 calculates per connection the ~~ration~~ ratio between ~~the~~ a number of arrived datagrams/bytes and the number of clock pulses and passes both ratios on to a billing system 5. In the same way, via a return connection 1', in which a measuring device 2', a clock generator 3' and a calculation device ~~4~~ 4' are included, a value r2 is in the opposite direction extracted from the reservation messages, which is an indication for the reservation promised by the network. That value too is passed on to the billing system and is included, as well as the value r1, in the price to be charged to the user. Instead of relating to

the capacity, the parameters r1 and r2 can also relate to the (requested or assigned) priority of the datagrams.